

UNITED STATES DEPARTMENT OF ENERGY (DOE)

OFFICE OF FOSSIL ENERGY

CARBON SEQUESTRATION PROGRAM

PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

PUBLIC SCOPING MEETING

JUNE 2, 2004 7:00 P.M.

Hilton Atlanta Northeast

5993 Peachtree Industrial Boulevard

Norcross, Georgia 30092

1 MR. LORENZI: Good evening. The time
2 is now 7:00 p.m. so let us begin.

3 This meeting was arranged by the U.S.
4 Department of Energy as one part of an effort to
5 obtain public participation for preparing a
6 detailed environmental analysis, what's called
7 an Environmental Impact Statement under the
8 National Policy Act. The analysis of activities
9 and plans vital to the Department of Energy for
10 implementing carbon sequestration research and
11 development activities.

12 Input from the public will assist the
13 Department of Energy in identifying and
14 prioritizing issues -- environmental issues
15 related to carbon sequestration, evaluating
16 their potential impacts, establishing a
17 framework for environmental solutions and
18 defining a program for future research,
19 development and testing of technologies and
20 methods for the sequestration of carbon dioxide.

21 This is the sixth of eight meetings
22 planned at various locations around the country
23 for that purpose.

24 The carbon sequestration activities
25 supported by the Department of Energy will help

1 achieve the goals of the global climate change
2 initiative that was announced by the President
3 in 2002. That initiative will require the
4 Department of Energy to conduct activities for
5 two purposes.

6 First, development of technology
7 options with the potential to reduce the carbon
8 intensity of the U.S. economy. And second,
9 helping to establish the information base needed
10 by the year 2012 for effective carbon
11 sequestration decisions and balanced economic
12 growth and investment in clean energy
13 technologies.

14 The implementation of a carbon
15 sequestration program by the Department of
16 Energy to help achieve those goals provides the
17 basis for the Department's decision to prepare
18 and Environmental Impact Statement. Your
19 comments will be an important part of that
20 effort. So I thank you for your attendance here
21 tonight.

22 My name is Lloyd Lorenzi and I'm from
23 the Department of Energy office in Pittsburgh,
24 Pennsylvania. We also have a representative,
25 another representative here from the Department

1 of Energy and he'll introduce himself.

2 MR. KLARA: I'm Scott Klara with the
3 Department of Energy out of the Pittsburgh
4 location as well.

5 MR. LORENZI: To assist the
6 Department of Energy in preparing the
7 Environmental Impact Statement we've awarded a
8 task effort to Potomac-Hudson Engineering
9 Company. And they will provide a team of
10 environmental and administrative specialists to
11 help prepare that Environmental Impact
12 Statement.

13 I would ask the representatives from
14 the Potomac-Hudson team who are here tonight to
15 introduce themselves.

16 MR. CROSSAN: I'm Brook Crossan with
17 Potomac-Hudson Engineering, and I'm the project
18 manager with the EIS. And with me is Wilma
19 Solomon of URS, our subcontractors on the
20 project.

21 MR. LORENZI: Outside the entrance to
22 the meeting room we provided information
23 regarding our activities related to
24 sequestration as well as activities that were
25 required to prepare this Environmental Impact

1 Statement. And I would ask that -- you all to
2 pick up this kind of information.

3 The one packet of information provides
4 the description of the process of the
5 Environmental Impact Statement process that will
6 be followed. This is a requirement under the
7 National Environmental Policy Act. There is a
8 handout that describes the process that we're
9 going to follow.

10 This handout also provides a -- what's
11 called a notice of intent that the Department of
12 Energy put in the federal register to announce
13 our intent to prepare the EIS. And there's some
14 very good information in this particular
15 document.

16 Also on the desk outside is a
17 description of the Department of Energy's
18 current activities and plans related to carbon
19 sequestration. I would, again, encourage you to
20 pick up this information. If you haven't
21 already, pick it up before you leave the meeting
22 tonight.

23 We've also provided a registration
24 sheet. And I want to encourage you to sign the
25 form as a record of your attendance here this

1 evening. And finally we've provided comment
2 sheets on which you can submit written comments,
3 either tonight or following the meeting.

4 But tonight we want to have oral
5 input, your oral input regarding our efforts to
6 prepare this environmental analysis of the
7 carbon sequestration program or your comments on
8 the carbon sequestration as a concept would also
9 be appreciated.

10 We will use those comments as well as
11 any other that are received by the close of the
12 comment period on June 25th to assist us in
13 preparing the Environmental Impact Statement.

14 A draft of that Environmental Impact
15 Statement when completed, probably sometime next
16 summer, will be made available for review and
17 public comment at that time. And we will again
18 schedule meetings around the country, possibly
19 in this same location to hear the public's
20 response to that draft Environmental Impact
21 Statement.

22 Before we get to your comments Scott
23 Klara from the Department of Energy will provide
24 a summary of carbon sequestration activities.
25 And then the microphone will be yours to provide

1 your comments. Scott's presentation may also
2 provide some good information that you can use
3 to formulate comments either tonight or again
4 after the meeting.

5 Are there any questions regarding
6 tonight's meeting? If there are no questions
7 Scott will have the floor.

8 MR. KLARA: Good evening everyone.
9 Appreciate you taking time out of your busy
10 schedules to come by tonight to participate in
11 this important event for us.

12 What I am going to do today is give
13 you a forty thousand foot level overview of the
14 carbon sequestration program within the
15 Department of Energy. And additional materials,
16 as Lloyd indicated, are located outside. And
17 feel free to contact any of the individuals here
18 who participate, Lloyd or myself or contacts
19 listed on that material for additional
20 information as we go forward with the process.

21 I'll give you a brief overview of
22 tonight's presentation. I'm going to start out,
23 for some of you sequestration might be a concept
24 that you're aware of, for others it's a new
25 concept. I plan to provide the information on

1 what we consider carbon sequestration, the
2 current fossil energy situation and some
3 greenhouse gas implications that result from
4 that, some pathways to stabilization,
5 emphasizing the importance of carbon
6 sequestration.

7 Then go into some program overview
8 information. Discuss two very important
9 initiatives within the Department. One called
10 regional partnerships, with one located in this
11 region. And I'll get to that at the appropriate
12 time in the presentation. Another important
13 initiative called FutureGen. And then I'll wrap
14 up with providing some additional sources of
15 useful information that you can pursue if
16 interested.

17 First, let's talk about what we mean
18 by carbon sequestration. Actually we're talking
19 about the capture and storage of CO₂ and other
20 greenhouse gasses that would otherwise be
21 admitted to the atmosphere. And more
22 importantly the permanent storage.

23 This capture can occur in two ways.
24 We can capture it at the point of emission. For
25 example, large scale power plants emit large

1 quantities of CO2 which is a very potent
2 greenhouse gas. So we capture that CO2 at the
3 source.

4 Another option is to absorb it from
5 air. Examples that we could pursue there would
6 be, for example, planting trees, where you take
7 the CO2 out of the air but you really don't know
8 and don't care where the CO2 came from.

9 Several storage locations are being
10 pursued within our research portfolio. And the
11 front-running options deal with underground
12 reservoirs. For example, depleting oil and gas
13 reservoirs, underground coal formations and an
14 underground geologic formation called a saline
15 formation that contains brackish salt water.
16 These all provide large potential capacities as
17 a sing for storing greenhouse gasses.

18 Another option which is being
19 investigated at this time is dissolving it in
20 the deep oceans. Right now ocean sequestration
21 isn't considered a viable option because of all
22 the environmental uncertainty, but certainly
23 oceans are the largest natural sink and it's
24 critical that we understand the mechanism
25 associated with greenhouse gas uptake in oceans.

1 Converting it into sold materials;
2 processes do exist where you can take CO2 and
3 convert it to rock-like structures. And we are
4 pursuing options that would allow us to store
5 CO2 by that method.

6 And lastly, I mentioned just a little
7 bit above, uptake in trees, grasses, soils and
8 algae. We typically call that terrestrial
9 sequestration.

10 Give you a little background into the
11 fossil fuel situation and give you some sense of
12 what and how the RD program is structured around
13 this information. The left-hand pie on this
14 graph shows the fossil energy use -- or it shows
15 the energy use in the United States. And it
16 shows that about eighty-six percent of the
17 energy used in the United States comes from
18 fossil fuels.

19 Correspondingly looking at the
20 right-hand pie chart it shows for the world,
21 similarly eighty-six percent of the energy
22 supply in the world comes from fossil fuels.
23 And you can see there that it's split between
24 coal, oil and natural gas.

25 What this chart shows is -- the lower

1 left-hand smaller pie chart, it shows the fossil
2 energy situation here in the United States at
3 eighty-six percent reliance on fossil fuels.

4 Then what it shows is a forecast
5 through the Energy Information Administration,
6 which is a forecasting arm of the Department of
7 Energy, it shows a forecast through the year
8 2025. A couple of things I want you to take
9 away from this information. One is that it's
10 showing that fossil fuel use will remain stable,
11 possibly increase. It's still at about
12 eighty-six to eighty-seven percent of total
13 energy.

14 The real critical thing to take away
15 from this is that the quantity of energy will
16 increase by forty percent. So what that means
17 is that if everything is left unchecked in terms
18 of greenhouse gas emissions you could expect a
19 rise potentially of forty percent or so in
20 greenhouse gas emissions through the year 2025
21 based on this particular forecast.

22 I'd like to discuss some greenhouse
23 gas implications and give you a sense of why
24 there's so much hoopla about the issues
25 surrounding CO2. What this chart shows is --

1 and try not to get too hung up with the actual
2 magnitude of the numbers, the bottom black area
3 shows temperature predictions, temperature rises
4 over the last several hundred thousand years.
5 So that two hundred there would represent two
6 hundred thousand years back in history.

7 What the top chart shows is the
8 corresponding CO2 concentration in the
9 atmosphere for those same several hundred
10 thousand years. What I want you to take away
11 from this chart is that you can see the close
12 correlation in tracking that the CO2
13 concentration and temperature rise or decrease
14 in the atmosphere has done for several hundred
15 thousand years.

16 Then let's take a look at this red
17 line on this right-side axis here. It goes up
18 from about a two hundred seventy level to about
19 a three hundred seventy level. What that shows
20 is for the past one hundred fifty years, since
21 the start of the industrial revolution we've had
22 a thirty percent increase in CO2 concentration.

23 Based on these predictions and data
24 that we have for several hundred thousand years
25 we have a correlation between temperature rise

1 and fall of the Earth's atmosphere, hence there
2 is a lot of the -- potential implications of
3 this most recent rise in CO2 concentration where
4 much of the concern is coming from.

5 Now let's take a look at what the
6 primary greenhouse gas contributors are in the
7 United States. What this chart represents is
8 the contributions from all the various
9 greenhouse sources in the United States. And
10 these are anthropogenic, which means human
11 induced. What this shows is over eighty percent
12 of the greenhouse gas contribution comes from
13 CO2 from energy, burning of fossil fuels
14 primarily.

15 The other significant component I'd
16 like to note is this methane component of nine
17 percent. What that is, is fugitive methane
18 emissions from coal mines, natural gas
19 distribution systems and landfills. From our
20 R&D program within the Office of Fossil Energy
21 the implications of this chart is that the
22 majority of our R&D is focused on mitigating CO2
23 emissions from energy and a smaller part of our
24 program is then focused on the fugitive methane
25 emissions.

1 What these three pie charts are meant
2 to show is that all fossil fuels and all energy
3 sectors contribute CO2 emissions. I'd like to
4 point your attention to the middle pie chart.
5 What that shows is the mix throughout the United
6 States. You see the coal, natural gasses and
7 oil mix throughout the United States. Coal
8 primarily for power and natural gas for a
9 variety of uses and oil primarily for the
10 transportation sector.

11 Now let's take a look at the
12 right-hand pie and look at it by sector. You'll
13 see that approximately forty percent of
14 greenhouse gas emissions come from electricity,
15 another thirty-two from transportation. And
16 another thirty from a variety of other sources.

17 From our R&D program perspective we're
18 focusing heavily on coal and we're focusing
19 heavily on solutions for electricity, of which
20 ninety percent of all coal in the United States
21 is used for electricity. And the reason our
22 program focuses on that right now is because
23 that represents a large central emitter that we
24 can focus technology and costs on and make big
25 reductions.

1 When you're talking about solutions to
2 carbon management there are really three options
3 that people divide it up into. Some people
4 three legs to a stool, three corners of a
5 triangle to deal with carbon management issues.
6 They are reduced carbon intensity. Some options
7 for that are going to renewables, solar, wind,
8 et cetera; switching to nuclear; switching to
9 lower carbon based fuels.

10 Another option in the center there
11 shows improved efficiency. Those efficiencies
12 could be done on the demand side, for example,
13 increased efficiency improvement in vehicles,
14 increased efficiency in appliances, et cetera.
15 They could also occur on the supply side, for
16 example, power generating facilities, increasing
17 the efficiency of power generation. And the DOE
18 has a very strong program related to that, but
19 it's outside the scope of this particular
20 programmatic environmental impact statement.

21 The last option is to sequester
22 carbon. And that's what we're here for tonight,
23 is the environmental impact statement and the RD
24 that we are pursuing. And with that we can go
25 to the next slide.

1 From an administration standpoint we
2 really have two very important things that come
3 from the administration relative to carbon
4 management and more importantly carbon
5 sequestration. The first one is the National
6 Climate Change Technology Initiative that was
7 released in June 2001. In that initiative the
8 President stated the importance of pursuing
9 technology solutions to carbon management. And
10 more importantly the President mentioned carbon
11 sequestration as one key technology option that
12 should be pursued.

13 The second important initiative is the
14 Global Climate Change initiative that was
15 released on Valentine's Day 2002. That
16 initiative was released at the same time as
17 something called the Clear Skies initiative was
18 released, which focused on from criteria
19 pollutants to power plants. So because of that
20 climate change initiative I don't believe that
21 got as much attention as it should have. But
22 this was another important initiative relative
23 to the sequestration program.

24 It again emphasized the importance of
25 technology options to deal with carbon

1 management. More importantly it was the first
2 initiative that actually put a goal, a metric on
3 the United States with regard to slowing
4 greenhouse gas emissions. And that goal, that
5 Lloyd spoke to a little bit, was to reduce the
6 greenhouse gas intensity by eighteen percent
7 over the next ten years.

8 And lastly what it stated too, that we
9 realize that we are a in science development
10 mode right now with regard to carbon management
11 options, and particularly sequestration. In
12 2012 after that ten-year period we will
13 reevaluate the science at that time and then set
14 a path forward toward stabilization, should it
15 be it be warranted by the science.

16 This chart shows another very
17 important reason why sequestration gets so much
18 hoopla. Sequestration has a large worldwide
19 capacity. What this chart shows on the bottom
20 right-hand, you can barely see a little line
21 there that shows the annual world emissions of
22 carbon at six point five gigatons. Huge, huge
23 emissions of carbon in the world.

24 What you see on the left-hand side are
25 some options within sequestration that could

1 potentially mitigate, sequester some of those
2 emissions. What you see there is you'll see a
3 lower bar and then a higher shaded bar. What
4 that represents is lower case estimate and
5 higher case estimate. What you can see from
6 this is a couple of things. One is that there
7 should be enough capacity for sequestration to
8 deal with these emissions for at least a century
9 or more, if not centuries.

10 Another important thing I want to
11 re-emphasize is, these emissions are ever so
12 large. I'll emphasize that again. There are
13 very few levers that we have available to deal
14 with emissions of that magnitude. Sequestration
15 is one of the few levers that we have that could
16 potentially deal with that. This chart helps to
17 emphasize that.

18 What we've done in the Department, as
19 well as many other organizations have done is to
20 do analysis on, well, what would it take if we
21 were to go to some stabilization options in the
22 United -- stabilization scenario in the United
23 States and how might we be able to fulfill that
24 mitigation of emissions. What this is from is
25 an analysis where we've taken a look at -- in

1 the United States going with the President's
2 goal of 2012 and that eighteen percent reduction
3 of the greenhouse gas intensity and then say
4 what if we want to stabilize the United States
5 at 2001 levels of greenhouse gas emissions.

6 What this represents is the gap of
7 emissions that would have to be avoided or
8 mitigated to reach that stabilization goal.
9 Then it looks at what are the options that could
10 be used to fill that mitigation gap. We've
11 divided them into several high areas -- several
12 high level areas. Efficiency of renewables is
13 the bottom section. It's got to be a
14 significant contributor. The next one is
15 forestation and agriculture. Non-CO2 greenhouse
16 gasses, primarily these fugitive methane
17 emissions. Then two options for sequestration;
18 value added, which has to do with enhanced coal
19 recovery and enhanced gas recovery where you can
20 get some value back by sequestration, and then
21 all other sequestration.

22 The point to take away from this is
23 that not only does sequestration have to be an
24 important player, it has to bear the brunt of
25 the role. In this particular analysis

1 sequestration would be required to mitigate at
2 least sixty percent or more of the emissions
3 just to get us to a 2001 stabilization level.
4 That's putting very big demands on these other
5 sectors as well to help contribute. So all
6 options must contribute. Sequestration has to
7 be a very key contributor if we are going to
8 pursue some kind of stabilization option.

9 What are our requirements for
10 sequestration? Some of these are probably
11 no-brainers but first and foremost we want to
12 make sure that it's environmentally acceptable,
13 that there's no legacy for future generations
14 and that we respect existing ecosystems. And
15 maybe more importantly, even, enhance existing
16 ecosystems. For example, planting trees, things
17 such as that.

18 We want to show that it's safe, we
19 want to make sure that we have the technology
20 and the tools available to us, to show that we
21 can sequester permanently with no sudden large
22 scale discharges. And I would argue we also
23 want to make sure that we can even go without
24 seepage, or if seepage would occur that we can
25 be able to spot that and mitigate it.

1 It's verifiable; very important. That
2 whether you plant a tree for sequestration or
3 you put some CO2 in an underground reservoir,
4 that are you are able to verify for the lifetime
5 of that storage that it's truly where you put
6 it.

7 And lastly, which is really just a
8 combination of all these, again, we also need to
9 make sure it's economically viable so that we
10 can grow the economies as well as dealing with
11 carbon sequestration.

12 Give you a high level flair for --
13 within Department of Energy how sequestration
14 fits, at the highest level there's a climate
15 change technology program that essentially
16 serves to coordinate the functions in the
17 Department, that's headed by someone named David
18 Conover.

19 Then there's an Office of Science,
20 basic science, is where a lot of basic research
21 is done relative to sequestration and climate
22 change options.

23 Then there's the Office of Fossil
24 Energy and that's where this carbon
25 sequestration program fits. And that

1 sequestration program, the reason that we're
2 spearheading this effort, the program and the
3 environmental impact statement, is because we're
4 really the group that's developing the
5 technologies that is developing the technologies
6 that is most near term to be applied or tested
7 in a large scale in the very near future.

8 Also to give you a sense even above
9 and beyond the Department of Energy, that
10 there's sequestration research going on in
11 nearly every major agency throughout the
12 government. Just to give you two examples of
13 agencies, in the upper right-hand corner you see
14 the environmental protection agency. They can
15 play a very strong lead role in looking at these
16 non-CO2 greenhouse gas emissions, for example
17 these fugitive methane emissions. We have some
18 work going on in that area that we work
19 collaboratively with the EPA.

20 In the lower left-hand corner you'll
21 see the United States Department of Agriculture,
22 the USDA, very strong leadership in terrestrial
23 sequestration. We work with them out of our
24 program looking at terrestrial sequestration,
25 reforestation of abandoned energy lands such as

1 reclaimed mine lands.

2 At the highest level here's what our
3 program structure is. There's some more
4 information that you can pick up outside
5 relative to more detail on our program.
6 Essentially it's divided into a core R&D
7 function where we have divided it into five
8 areas; capture, sequestration, breakthrough
9 concepts, fugitive methane, non-CO2 and
10 measurement, monitoring and verification. You
11 can get a better description of those areas from
12 our technology road map program plans available
13 outside.

14 Two key initiatives I'll speak to in
15 the next couple of slides, this infrastructure
16 piece, which is our regional partnerships, and
17 then this other piece down here, which is large
18 scale field testing, right now that's called our
19 FutureGen initiative.

20 First I'll discuss our regional
21 partnerships. Back in October of last year we
22 awarded seven regional partnerships. In this
23 region of the country the regional partnership
24 is the Southeast partnership. And we have
25 several members of the partnership here. I

1 would encourage you to interface and interact
2 with them for additional information and/or
3 interest in this topic.

4 What you see here is that we have over
5 a hundred and fifty-four organizations
6 represented and participating throughout these
7 partnerships. Right now we also cover two
8 Canadian provinces, three Indian nations and
9 forty states. So we have a very large number of
10 organizations and coverage throughout the
11 country now looking at carbon sequestration
12 issues.

13 What are these regional partnerships
14 about? The easiest way I can describe it is if
15 we had cost-effective, proven technologies today
16 we couldn't employ them tomorrow because of
17 numerous infrastructure issues that we just
18 don't know how to deal with at this stage. And
19 these regional partnerships are designed to help
20 us fulfill these infrastructure needs.

21 The first example is baselining
22 regions for sources of sinks. We have very good
23 understanding of what most of the major sources
24 of greenhouse gasses are, for example power
25 plants. We have maps of geologic sinks that are

1 very high gross level, existing maps of those.
2 What we don't know is of those sinks how much of
3 that is truly proven capacity for sequestration.
4 And we're looking for the partnerships to help
5 us baseline, prove that, and map out those
6 sources of sinks. Otherwise we're talking about
7 billions of dollars of pipeline infrastructure
8 that would completely, completely stonewall this
9 concept.

10 Address regulatory, environmental and
11 outreach issues. Most people have never heard
12 of sequestration. We've had a really difficult
13 time getting the concept fed throughout the
14 public. The regional partnerships are ever so
15 key in helping us do that. On the environmental
16 side we put CO2 in the ground for enhanced coal
17 recovery, we know how to regulate and deal with
18 that. As soon as you call it sequestration you
19 get trucks. Nobody knows how to deal with it.
20 We're working with the EPA and other
21 organizations, like the regional partnerships to
22 try to put together some framework of how we
23 might deal with that.

24 Liabilities. You could have a
25 situation where you have a hundred companies

1 sequestering into one saline formation under the
2 ground, how do you deal with liabilities. One
3 example would be Australia right now is looking
4 at setting up even trust funds that may be
5 required should they pursue large scale
6 sequestration options.

7 Establishing monitoring and
8 verification protocols. It's one thing in our
9 R&D portfolios to develop technologies such as
10 seismic technologies that can take a snapshot of
11 an underground formation and show you where the
12 CO2 is at any given time. It's another thing to
13 development a soil instrumentation and you come
14 and measure soil carbon where you plant a tree
15 or re-till the soil.

16 What isn't clear and what is a more
17 subjective decision is how often do you have to
18 take a seismic snapshot to verify and prove what
19 you are doing is real, how often do you have to
20 test the soil, how often do you have to send out
21 a forester. These are issues that are very
22 subjective and we're relying heavily on the
23 regional partnerships to help us determine those
24 kind of issues and protocols.

25 We also in phase two of the

1 partnerships, which will be occurring -- it's
2 listed in the fiscal year 2005, we're going to
3 be looking to the partnerships to help us
4 validate some of these technologies in the field
5 and some of these protocols in the field. And
6 that's another important reason why this
7 programmatic environmental impact statement
8 should help us along those lines once we get the
9 partner program.

10 And lastly determine benefits to the
11 region. Like I said, what type of benefit would
12 improve with the capture of CO2. Well, it turns
13 out that CO2 can be used for many reasons. It
14 can be used to enhance oil production. We call
15 it EOR, enhanced oil recovery. It can also be
16 used to enhance gas recovery, especially through
17 unmineable coal seams where you force methane
18 out, get methane out.

19 There are also some regions of the
20 country that are so desperate for water, New
21 Mexico comes to mind, where they are looking at
22 releasing water from these saline formations and
23 desalinating it for drinking water. It creates
24 huge capacity for CO2 storage.

25 These are the kind of regional issues

1 that can potentially provide benefits to the
2 regions of the country relative to
3 sequestration.

4 And now I'll talk about FutureGen, an
5 activity for potentially spending up to a
6 billion dollars for creating the energy plant of
7 the future. We're looking at a coal-based
8 technology to produce higher electricity,
9 hydrogen or a combination of both and
10 sequestering it geologically in a formation.
11 We're looking at doing this on a commercial
12 scale, two hundred seventy-five some-odd
13 megawatts, capturing up to a million tons of CO2
14 a year and sequestering it.

15 We're looking for this plant to take
16 advantage of all the advanced technologies
17 coming out of the RD pipeline to emit virtually
18 no air pollutants and capturing permanently and
19 sequestering the CO2 to serve as a proving
20 ground, at least in the United States, to show
21 that the concept is valid, it does what we say
22 it will do.

23 We're about at the end of the
24 presentation now, with two slides on where
25 information can be obtained. In addition to

1 contacting anybody at the Department that works
2 on the program, we're always available and more
3 than willing to talk with you about information
4 on the program, we have a very extensive website
5 where you can get information in the package, it
6 will show you that and then talk in nauseating
7 detail about our program and information about
8 every one of our projects.

9 And lastly, we also have a carbon
10 sequestration newsletter that you can get sent
11 out monthly. It talks about the latest
12 activities occurring throughout the world in the
13 area of carbon sequestration. This newsletter
14 is available free of charge. All you need is an
15 E-mail address and go to this link. You can
16 send it to your E-mail address by computer, you
17 don't have to talk to anybody to be put on the
18 list and get the carbon sequestration newsletter
19 free of charge.

20 And with that I'd like to end the
21 presentation and turn it back over to Lloyd as
22 we get into the public comment section of the
23 meeting. Thank you.

24 MR. LORENZI: Thanks, Scott.

25 We've had two people who have

1 requested time to speak tonight. And we will
2 honor their request in the order that they have
3 signed the registration sheet. And any others
4 desiring to comment will certainly have the
5 opportunity to do so.

6 We had originally planned the target
7 of a five-minute time period for each individual
8 person to render their comments. We will adhere
9 to that time period within reason, since there
10 are so few commenters registered, to go over
11 five minutes I'm sure we will tolerate that.

12 We would ask you that you, the
13 commenter state and spell their name for the
14 benefit of the court reporter. And if anyone's
15 making comments on behalf of an organization we
16 would request that you state your organizational
17 affiliation. We would also ask that you use the
18 microphone. There is an on/off switch on the
19 bottom of the mike. Thank you.

20 And the first person who had signed up
21 to speak is Gerald Hill.

22 DR. HILL: Thank you for the
23 opportunity to speak this evening. I will be
24 giving a brief overview summary of my comments.
25 And I have provided the court reporter with a

1 copy of -- a more detailed copy of written
2 comments.

3 My name is Gerald R. Hill, as
4 indicated on the card. I am senior technical
5 advisor to the Southern States Energy Board.
6 The Southern States Energy Board or SSEB is
7 located at 6325 Amherst Court, Norcross,
8 Georgia. I am speaking on behalf of SSEB and in
9 support of carbon sequestration programs. We
10 believe that the potential environmental
11 benefits of carbon sequestration are significant
12 and, therefore, the demonstration and deployment
13 of enabling technologies should proceed.

14 Sixteen southern states and two
15 territories comprise the membership of SSEB.
16 SSEB is chaired by a governor who is
17 instrumental in setting priorities for the
18 board's activities.

19 In September of 2002 West Virginia
20 Governor Bob Wise became SSEB Chairman and
21 declared carbon management to be a priority. A
22 highlight of SSEB's carbon management effort is
23 the Southeast Regional Carbon Sequestration
24 Partnership, or SECARB. That's how we referred
25 to it earlier.

1 SECARB is one of seven regional
2 partnerships that work with the National Energy
3 Technology Laboratory for to assess issues
4 related to the capture, transport and storage of
5 carbon dioxide emissions from fossil fuel
6 sources. Work by SECARB provides the basis for
7 specific of comments I'll be making this
8 evening.

9 First, carbon dioxide capture. We see
10 this as an accepted and historic practice
11 worldwide. Both food grade and industrial grade
12 CO2 are produced and consumed within world
13 economies. The demonstration and deployment of
14 new technologies will simply expand the
15 available sources of CO2 to include fossil fuel
16 emissions.

17 Carbon dioxide transport also is an
18 accepted and historic practice worldwide. CO2
19 is transported via pipeline, tanker truck and
20 rail on a regular basis. The CO2 that
21 originates from fossil fuel emissions can be
22 transported in the same manner.

23 Carbon dioxide storage occurs
24 naturally in terrestrial and geologic systems.
25 Terrestrial systems -- terrestrial systems are

1 being evaluated as potential sinks for
2 sequestering CO2 emissions as stored carbon.
3 The U.S. Department of Agriculture has noted
4 that the South Central and Southeast regions of
5 the United States have the highest potential for
6 carbon storage in terrestrial systems.

7 Geologic systems also are being
8 evaluated as potential sinks for CO2 emissions.
9 Currently CO2 from natural underground
10 formations or from commercially available
11 separation units is injected into oil and gas
12 wells in order to increase the output of the
13 wells. This practice is, as Scott also pointed
14 out, is referred to as enhanced oil recovery.
15 We feel the use of CO2 that is captured from
16 fossil fuel emission sources will not introduce
17 any new or unknown environmental impacts to the
18 EOR industry.

19 In addition, CO2 can be used for
20 recovery of coal bed methane. In this practice
21 CO2 is pumped into coal seams and methane is
22 liberated from the seams. The Southeast region
23 has many thin seams of coal that could store CO2
24 and produce methane for sale.

25 A third category is -- of geologic

1 storage is the sequestration of CO2 in deep
2 saline formations. This is a viable option for
3 storing huge volumes of CO2 emissions from
4 fossil fuel facilities.

5 With respect to regulatory permitting
6 and safety framework it is essential that the
7 regulatory permitting and safety framework for
8 CO2 injection evolve on its own merit. The
9 framework must not be inappropriately or
10 inaccurately constrained by existing Underground
11 Injection Control programs that were designed
12 for unrelated activities.

13 Also, the ability to measure, monitor
14 and verify performance of carbon sequestration
15 technologies is an essential component of any
16 demonstration or deployment program. Analytical
17 tools and methods must be demonstrated under
18 conditions that very reasonably represent actual
19 field conditions for carbon sequestration.

20 Finally, a major objective of the
21 carbon sequestration program is to demonstrate
22 and deploy technologies that can achieve
23 environmental benefits and remain economically
24 viable. For this reason carbon sequestration --
25 the carbon sequestration program must maintain a

1 level of flexibility that allows breakthrough
2 concepts to be tested and verified.

3 Thank you for the opportunity to speak
4 this evening. For those of you who would like
5 further information on SSEB or SECARB you can
6 see me or Kimberly Sams or Cathy Baskin will be
7 here this evening, or log into SSEB.ORG. Thank
8 you.

9 MR. LORENZI: Thank you, Dr. Hill.

10 I believe we had planned to include in
11 the EIS analysis most of the areas that you
12 mentioned, but I would ask that maybe either
13 tonight or following the meeting if you could
14 elaborate a little bit on the issue that you
15 mentioned, that regulatory permitting must
16 evolve on its own merit. You don't have to do
17 it tonight, but if you could explain that in a
18 little more detail we would greatly appreciate
19 it.

20 MR. HILL: Okay.

21 MR. LORENZI: Thank you. The next
22 speaker is Keith Taniguchi.

23 MR. TANIGUCHI: Good evening. Thank
24 you.

25 My name is Keith Taniguchi and I have

1 copies of my brief statement that I will give to
2 the reporter at the conclusion of my comments.

3 I am the U.S. Fish and Wildlife
4 Service's coordinator of carbon sequestration in
5 the Southeast, in the Southeastern United
6 States. And our geographic area covers the
7 states of Louisiana, Arkansas, Tennessee,
8 Kentucky, North Carolina and all the states
9 southward into Puerto Rico and the U.S. Virgin
10 Islands.

11 I'd like to just say from the
12 statement that I appreciate this opportunity to
13 share from the Wildlife Service perspective and
14 we commend the partnership and the Department of
15 Energy's other regional partnerships for their
16 efforts to involve the public and all other
17 interested governmental and non-governmental
18 organizations in the efforts to implement the
19 best possible carbon sequestration program.

20 Our region possesses many unique
21 opportunities for geological and terrestrial
22 carbon sequestration. We in the Fish and
23 Wildlife Service, however, are most familiar
24 with the tremendous terrestrial carbon
25 sequestration opportunities in the Southeast.

1 We believe that a natural carbon sequestration
2 program can become a positive force for
3 improving the quality of life for society and
4 provide benefits for fish and wildlife by
5 encouraging carbon sequestration policies that
6 would foster strategic large-scale restoration
7 and land management of native habitats.

8 Public forums such as this one tonight
9 provide opportunities for increasing the
10 public's participation in efforts to help manage
11 the global warming effect of greenhouse gasses
12 emitted into the atmosphere. The success of a
13 national carbon sequestration program will
14 depend on the building of a broad coalition of
15 all interested parties. We believe that carbon
16 dioxide can be effectively sequestered through
17 improved land, forest and wildlife habitat
18 management practices and that we can avert
19 unintended market forces that may treat the
20 landscape only for storing carbon without any
21 consideration for restoring ecosystem integrity
22 and stability.

23 We support the public scoping process
24 and, in addition, we will also have future
25 opportunities to provide formal comments on the

1 Programmatic Environmental Impact Statement
2 through our Department of the Interior.
3 Procedurally, the Department of Interior
4 Bureaus, and our Fish and Wildlife Service in
5 particular will be officially reviewing future
6 carbon sequestration EIS's for the
7 implementation of the carbon sequestration
8 program.

9 During the past two years we have also
10 worked closely with the Department of Energy's
11 Climate Change Technology Program as it drafts
12 the U.S. strategic plan for greenhouse gas
13 sequestration. We also participate on the U.S.
14 Department of Agriculture's committee that is
15 drafting the terrestrial carbon sequestration
16 accounting rules and guidelines for the forestry
17 sector.

18 We have six years of experience in
19 helping industry and non-governmental
20 organizations conduct terrestrial carbon
21 sequestration projects in the Southeastern U.S.
22 Our sequestration projects in partnership with
23 industry are a positive example for large-scale
24 strategic landscape-level land management and
25 native habitat restoration that directly benefit

1 society, wildlife and fish.

2 Over sixty-five thousand acres of
3 marginal agricultural land on or adjacent to our
4 twenty-four Fish and Wildlife Service National
5 Wildlife Refuges, and also State wildlife
6 management areas have been replanted with
7 bottomland hardwood trees to sequester carbon
8 dioxide and to concurrently restore fish and
9 wildlife habitats.

10 The majority of these projects have
11 been done in the Lower Mississippi River Valley,
12 and they will stand for the next seventy to one
13 hundred years. And we will be involved with the
14 best management practices of maintaining these
15 properties and the wildlife habitats. We are
16 also very encouraged by the potentials for
17 longleaf pine and wiregrass community carbon
18 sequestration projects in the coastal plains
19 along the eastern Gulf of Mexico. And thirdly
20 we are also interested and very encouraged by
21 the potentials for keeping carbon sequestered in
22 the highly organic eastern North Carolina
23 Pocosin wetland soils.

24 Thank you for this opportunity for
25 being able to comment for the record. Most of

1 all, in our Southeastern region we are very
2 strong advocates for a partnership approach to
3 all terrestrial carbon sequestration projects.
4 And we believe that it will be a significant
5 venue by which atmospheric carbon can be
6 sequestered while we wait for the development of
7 technologies that will allow us to sequester
8 much larger amounts of greenhouse gasses through
9 geologic processes.

10 So thank you for this time to comment.

11 MR. LORENZI: Thank you, Keith.

12 Okay, you're going to provide those?

13 MR. TANIGUCHI: Yes.

14 THE COURT: Keith, just one question.

15 Did you indicate that beyond your office Fish
16 and Wildlife would also be providing comments
17 either during the scoping period or on the draft
18 EIS plans.

19 MR. TANIGUCHI: That I don't have any
20 knowledge of. We have six regions -- excuse me,
21 seven regions and to a fair degree they have
22 their independence in deciding whether they will
23 comment for the public record or not.

24 MR. LORENZI: Okay.

25 MR. TANIGUCHI: All of our agencies

1 will be involved in the commenting process on
2 the EIS. I can speak for my region, and we are
3 very outspoken about our support of terrestrial
4 carbon sequestration and will continue to be
5 involved in your process.

6 MR. LORENZI: Okay. Thank you. We
7 appreciate that.

8 Are there any others who did not
9 register but want to make comments tonight? I
10 would just remind you that comments and views
11 from the public will help shape this
12 environmental analysis that's going to be
13 performed -- or prepared by the Department of
14 energy.

15 No other commenters tonight?

16 In that case I'll just remind you
17 that the closing date for comments on this
18 process is June 25th and so I encourage you to
19 -- before you depart from the meeting to take
20 some materials that describe the program, the
21 process, and also take some comment sheets that
22 you can use later on to submit written comments
23 if you so desire.

24 Also, that information that's
25 available out front will help you if you have an

1 interest in following the progress of the
2 Department of Energy's effort to prepare the
3 EIS, the Environmental Impact Statement. It
4 will certainly help you to do so. This is a
5 unique opportunity for the public to contribute
6 to a federal action. So I encourage you if you
7 do have an interest to participate to the extent
8 that you feel is appropriate and necessary.

9 And with that final comment we'll
10 begin to close the meeting. And I wish you all
11 safe travel back to your residence. And I thank
12 you again for your participation. And at 7:48
13 p.m. we'll call the meeting to a close.

14

15

16

(Whereupon, the above-styled matter was concluded.)

17

18

-o0o-

19

20

21

22

23

24

25

1 C E R T I F I C A T E

2 G E O R G I A)
3)
4 FULTON COUNTY)

5 I, Kevin R. King, Deposition Officer and
6 Certified Court Reporter in and for the State of
7 Georgia at Large, do hereby certify that the
8 foregoing transcript is a true and complete record of
9 the public hearing of the 2nd day of June, 2004,
10 taken in my presence; that I am neither a relative
11 nor an employee nor attorney nor counsel of any of
12 the parties, nor relative nor an employee of such
13 attorney or counsel, of any of the parties, nor a
14 relative nor an employee of such attorney or counsel,
15 nor financially interested in the action.

16 Witness my hand and official seal at
17 Atlanta, Fulton County, Georgia, this the 19th day of
18 June, 2004.

19

20 KEVIN R. KING, CCR# B-1225

21 (SEAL)

22

23

24

25

